Atty Dkt:
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#4/Amdt A
2/27/02
C. McKinney

IN THE UNITED STATES PATENT
AND TRADEMARK OFFICE

Applicant: CHAI ET AL
Serial No.: 09/506,160
Filed: 05/18/2001
For: LUTETIUM YITRIUM ORTHOSILICATE SINGLE CRYSTAL SCINTILLATOR DETECTOR
Examiner: Hannaher Group: 2878 Paper No.: __

RESPONSE

Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

In response to the Office Action mailed October 15, 2001, and the phone call with the examiner on January 15, 2002, please amend the above identified application as follows:

IN THE SPECIFICATION

Page 1, lines 20 - 25 and page 2, lines 1 - 6 change the paragraph as follows:

The first scintillating crystal is calcium tungstate ($CaWo_4$) which was used before the turn of this century to detect x-rays. The most significant discovery of a scintillating crystal is Thallium-activated sodium iodide NaI(Tl)) [NaI(T1)] in the mid-40's. Even now, it is still the most widely used scintillating crystal. This is because large size crystals are readily available and quite inexpensive. Moreover, the light yield is the highest among all the known materials and is still the benchmark standard for all other scintillator crystals even after all these years. Even though NaI(Tl)) [NaI(T1)] is widely used, it is not without problems. It is hygroscopic and very soft. Moreover, the density is too low (37 g/cm^3), [37 gm/cm3] the effective mass number (Z_{eef}) of 49 is also too small. It has a large and persistent after glow which interferes with the intensity counting system. Finally, the decay time about of 230 nanoseconds (ns) is too slow for many applications.

Page 2, lines 18 - 25 and page 3, line 1 change the paragraph as follows:

BGO was found in the early 70's. It has higher density (7.13 g/cm^3), [7.13 gm/cm3] and is non-hygroscopic. But it also has problems such as low light yield (15% that of NaI(Tl)) [NaI(T1))], slow decay time (300 ns) and high refractive indices (n = 2.15) which results in light loss due to internal reflection. Still BGO scintillator crystals are now used in high energy calorimetry in particle physics research Institutes. It is also used as the detector for the 511 keV [KeV] gamma-ray radiation of the positron emission tomographs (PET) in medical imaging application. Because of the low light and slow decay, the image produced from the BGO PET machine tends to be blurred with poor resolution.

Page 3, lines 2 - 10 change the paragraph as follows: